BOGER, JENNIE LYDIA. A Spoken Word Count of Aphasic Speakers. (1973) Directed by: Dr. Floyd E. Earle. Pp. 58.

This study was designed to collect data on the frequency of occurrence of words within grammatical classes in the speech of aphasic subjects. It was hypothesized that there would be no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures).

The subjects were twelve white male aphasic patients. The speech samples were elicited by responses to four groups of questions and by responses to five pictures of the Thematic Apperception Test. Typewritten transcriptions of the speech samples were prepared, and the words obtained were classified into thirteen grammatical classes: noun, verb, adjective, adverb, auxiliary verb, conjunction, pronoun, quantifier, preposition, article, relative, indefinite, and interjection.

The frequency of words used in each of the thirteen grammatical classes elicited by the two methods was analyzed using the chi-square statistic. The null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples

elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected at the .01 level of significance.

A SPOKEN WORD COUNT OF APHASIC SPEAKERS

by

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A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

Greensboro
1973

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ACKNOWLEDGMENTS

While it is not possible to recognize all of the people who have assisted in this study, the author wishes to express her gratitude to the patients who provided the speech samples and to the author's colleagues who helped by listening to the recordings and editing the transcriptions.

Indebtedness to Mrs. Clara Wachtel and Mrs. Candy Scharver of the Durham Veteran's Administration Hospital is hereby acknowledged for their assistance in the management of the patients.

Also, acknowledgment is given to Dr. Robert Paul and Miss Haley Poteat of the Durham Veteran's Administration Hospital for providing hearing examinations of the patients.

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CHAPTER I

INTRODUCTION

Although spoken word counts of aphasic speakers have been reported in the literature, spoken word counts of normal speakers have been more common. Spoken word counts of normal speakers have been obtained from telephone conversations, speeches, and descriptions of pictures. These word counts provide information concerning the expected frequency of occurrence of words in the speech of normal speakers.

Joseph M. Wepman and Lyle V. Jones have proposed that word counts of aphasic speakers may aid in the diagnosis and classification of aphasic speech. The deviations from normal found in the spoken word counts of aphasic speakers may establish a method for categorizing aphasic language based on residual speech. The method of eliciting speech in Wepman's and Jones's studies from both normal and aphasic speakers was by verbal responses to the Thematic Apperception Test pictures.[1]

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[1]Joseph M. Wepman, et al., "Studies in Aphasia: Background and Theoretical Formulations," Journal of Speech and Hearing Disorders, XXV (November, 1960), p. 329.

Different social situations may require different verbal responses. A speech sample obtained by responding to

questions may or may not be different from a speech sample obtained by responding to pictures.

The purpose of this study was to investigate the proportion of each part-of-speech in speech samples obtained from aphasic speakers by two different methods: by responding to verbal stimuli and by responding to visual stimuli. Improved understanding of the differences that might occur depending upon the method employed in eliciting the verbal responses of aphasic speakers could lead to more effective clinical management of obtaining speech samples.

CHAPTER II

REVIEW OF THE LITERATURE

A review of selected studies of the frequency of occurrence of words over the last fifty years is presented in this chapter. The literature has provided information concerning the frequency of occurrence of words in written materials, the frequency of occurrence of words in the speech of normal speakers, and the frequency of occurrence of words in the speech of aphasic speakers.

Written Word Counts

Dewey compiled the frequency of occurrence of English speech sounds in 1923. The sample consisted of 100,000 words taken from printed materials, such as, newspapers, novels, short stories, plays, speeches, religious writings, and magazines.[2]

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[2]Godfrey Dewey, Relativ Frequency of English Speech Sounds (Cambridge, Massachusetts: Harvard University Press, 1923), pp. 8-9.

In 1944, Thorndike and Lorge wrote The Teacher's Word Book of 30,000 Words. It included the data of the Thorndike Teacher's Word Book, published in 1921, and of its extension in 1931 to include 20,000 words, and also the data of three other word counts of over four and

one-half million words each. The book contained 30,000 words listed alphabetically; each word was followed by a record of the frequency of occurrence of the word in written materials taken from approximately 400 books and twelve issues from five different magazines.[3]

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[3]Edward L. Thorndike and Irving Lorge, The Teacher's Word Book of 30,000 Words (New York: Columbia University Bureau of Publications, 1944), p. x.

Spoken Word Counts of Normal Subjects

In 1930, French, Carter, and Koenig of Bell Telephone Laboratories completed a study of the relative frequency of occurrence of words in telephone conversations. In order to collect data for this study a stenographer listened to telephone conversations. Eighty-nine per cent of the calls monitored were business calls. The speakers were two men in approximately eighty-seven per cent of the calls, two women in approximately ten per cent, and a man and a woman in approximately three per cent. During one week, the stenographer recorded only the nouns used; during the second week she recorded only verbs, and during the third week only adjectives and adverbs. This process was continued until observations had been made on 500 conversations for nouns, 500 conversations for verbs, and 500 conversations for adjectives and adverbs. Approximately 150 conversations each were observed for prepositions and conjunctions, pronouns, and articles. The stenographer

recorded approximately 80,000 words from the conversations. Of these 80,000 words, only 2,240 were different words. These 2,240 words were classified into seven classes based on parts-of-speech: nouns, adjectives and adverbs, verbs, auxiliary verbs, pronouns, prepositions and conjunctions, and articles.[4]

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[4]Norman R. French, Charles W. Carter, Jr., and Walter Koenig, Jr., "The Words and Sounds of Telephone Conversations," Bell System Technical Journal, IX (April, 1930), pp. 290-94.

After the French, Carter, and Koenig study of the relative frequency of occurrence of words in telephone conversations, other studies began to analyze the frequency of occurrence of words in spoken English. Three of these studies obtained their data by analyzing speeches.

Voelker, in 1942, analyzed the creative speeches of 245 students. The subjects of the speeches were "Many Hands Make Light Work" and a description of a Biblical picture. A sample of 100,000 words used in these creative speeches was analyzed. The 1000 most frequent words found in this sample were compiled into a word list in which the words were rank ordered according to their frequency of occurrence.[5]

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[5]Charles H. Voelker, "The One-Thousand Most Frequent Spoken-Words," Quarterly Journal of Speech, XXVIII (April, 1942), pp. 192-93.

Fossum, in 1944, analyzed speeches of seventy-three junior college students enrolled in an elective course in speech training. The speakers were allowed to speak on any subject and were encouraged to speak extemporaneously. Each speaker made five different speeches. The speeches were transcribed, and a total of 10,278 different words were found among the 143,586 words collected. A published word list containing 572 of the most frequently used words was compiled. Following each word were two numbers. The first number indicated the frequency of occurrence of each word, and the second number indicated how many of the seventy-three speakers used the word. Fossum found that the Thorndike Word List contained only forty-two per cent of the words used by the speakers in this study, and stated a need for a more comprehensive word list derived from speech.[6]

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[6]Ernest C. Fossum, "An Analysis of the Dynamic Vocabulary of Junior College Students," Speech Monographs, XI (1944), pp. 89-91.

A third study of the vocabulary which students used in giving speeches was reported in 1955 by Black and Ausherman. The goals of the study were to sample the speaking vocabulary of male college students and then to analyze the relative frequency of the words used. The sample consisted of the extemporaneous speeches of 274 male students. The speakers selected the topics for the speeches.

The total sample consisted of 288,152 words; of these, 6,826 were different words. These 6,826 words were then compiled into word lists. The words appeared in the first list in the order of their frequency and in the second list alphabetically. One-tenth of the 6,826 words were not in Thorndike's list of 20,000 frequently used words in written materials; however, the most common words were much the same in the vocabularies of the speakers and writers. The nine words that Dewey found to be used most frequently in writing were also found to be the most frequent in the students' speeches.[7]

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[7]John W. Black and Marian Ausherman, The Vocabulary of College Students in Classroom Speeches, Report to the United States Naval School of Aviation Medicine, Naval Air Station, Pensacola, Florida, August 15, 1955 (Pensacola, Florida: United States Naval School of Aviation Medicine, 1955), pp. 1-4.

The spoken word counts of normal speakers by French, Carter, and Koenig; Fossum; Voelker; and Black and Ausherman are representative of the word counts of spoken English compiled by researchers. No spoken word counts resulted in as large a rank order of words as the written word count by Thorndike and Lorge. There were limitations to the studies: the spoken word counts were taken from specific subgroups, such as, business personnel and students, in specific situations, such as, telephone conversations and speeches. A speech sample from unimpaired adults more

representative of the general population was needed. In order to be representative of the general population the study needed to include both males and females of differing ages and with different socioeconomic backgrounds.

Being aware of the limitations of previous spoken word counts, Jones and Wepman tried to eliminate these limitations in a spoken word count published in 1966. Fifty-four adult speakers, both male and female, served as subjects; they ranged in age from eighteen to eighty and in education from completion of the second grade to completion of the Doctor of Philosophy degree. Each subject was interviewed individually in a single session, usually less than an hour in duration. During this session, each speaker verbally responded to twenty pictures of the Thematic Apperception Test. All speech from each session was tape recorded. The mean number of words spoken was 2,227 with a range from 1,032 to 5,276. The total number of words obtained from the fifty-four speakers was 136,450. Word frequency lists of three types were presented. The first presented words in the order of their relative frequency of use. The second was organized alphabetically within thirteen part-of-speech classes: noun, verb, adjective, adverb, auxiliary verb, conjunction, pronoun, quantifier, preposition, article, relative, indefinite, and interjection. The third list was ordered alphabetically throughout.[8]

[8]Lyle V. Jones and Joseph M. Wepman, A Spoken Word Count (Chicago: Language Research Associates, 1966), pp. 4-5.

This study by Jones and Wepman did eliminate many of the limitations of the earlier spoken word counts; however, only one type of stimulus (the pictures of the Thematic Apperception Test) was employed in eliciting the speech samples. The investigators did not examine speech samples obtained by other methods, such as, questions or informal conversation. Thus, one does not know if the speech samples obtained by responding to the pictures of the Thematic Apperception Test would be different from speech samples obtained by other methods.

Spoken Word Counts of Aphasic Subjects

In 1956, Wepman, Jones, Bock, and Van Pelt reported a language analysis made between a single normal speaker and an aphasic patient. A simplified linguistic analysis was used, comparing the frequency of five parts-of-speech: nouns, verbs, descriptive modifiers, pronouns, and other. The purpose of the analysis was to explore the concept of anomia, a disorder characterized by a subject's inability to use substantive words. A normal model of the relationship between frequency and grammatical usage was constructed from word counts of written English. To determine if the expected frequencies for normal written English could

reasonably represent spoken English, a speech sample from a normal subject was also analyzed. A sample of 14,586 running words was obtained from the aphasic subject and another sample of 12,021 running words from the normal subject. Each sample was tape recorded and transcribed for analysis. Stimuli used to elicit conversations were the same for the two subjects. (The type of stimuli used was not stated.) The results of the analysis revealed that the speech of the normal subject was not exactly comparable to normal written English. The speech of the normal subject showed an under-use of words of lower frequency and an over-use of words of higher frequency; however, the speech of the aphasic subject showed an even greater under-use of lower frequency words and over-use of higher frequency words. All but the most frequent nouns, verbs, and descriptive modifiers were absent from the speech of the aphasic patient. The authors concluded that the speech of a so-called anomic patient might be characterized by the loss of all but the most general (and hence most frequent) words of the language, rather than by a loss of nouns only.[9]

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[9]Joseph M. Wepman, et al., "Psycholinguistic Study of Aphasia: A Revision of the Concept of Anomia," Journal of Speech and Hearing Disorders, XXI (December, 1956), pp. 468-76.

In 1966, Jones and Wepman reported a case study which utilized a more detailed linguistic analysis. Speech

samples were obtained from an aphasic patient by his responses to the Thematic Apperception Test (TAT) pictures. Eight successive TAT protocols were obtained over a fourteen month period. The samples were classified into thirteen part-of-speech classes: noun, verb, adjective, adverb, pronoun, relative, article, indefinite, auxiliary, quantifier, preposition, conjunction, and interjection. The results were compared to two normal controls who were matched with the patient for age, sex, and socioeconomic status and to twenty-seven unmatched normal subjects. The analysis showed a tendency for verbs, adjectives, and adverbs to remain relatively constant and similar to the verb, adjective, and adverb percentages of the matched and unmatched normal subjects. The percentage of pronouns decreased as the percentage of nouns increased. The relatives, articles, indefinites and auxiliaries were comparatively stable.[10]

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[10]Joseph M. Wepman and Lyle V. Jones, "Studies in Aphasia: A Psycholinguistic Method and Case Study," in Vol. III of Brain Function: Speech, Language, and Communication, ed. by Edward C. Carterette (Berkeley: University of California Press, 1966), pp. 152-54.

Other psycholinguistic studies of aphasic speakers have been completed. Although these studies have examined linguistic features that are not directly applicable to this study, the stimulus methods used to elicit speech are applicable. Therefore, only the stimulus methods are reported here.

Fillenbaum, Jones, and Wepman elicited speech samples from twelve adult aphasic patients and twelve control subjects by using twenty cards from the Thematic Apperception Test.[11] Howes obtained 5,000-word samples

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[11]Samuel Fillenbaum, Lyle V. Jones, and Joseph M. Wepman, "Some Linguistic Features of Speech from Aphasic Patients," Language and Speech, IV (1961), p. 91.

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from more than sixty aphasic patients by informal interviews. The interviewer asked questions only to stimulate the patient's interest or provide him with a subject for comment. The patient was encouraged to talk about anything that interested him.[12]

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[12]Davis Howes, "Application of the Word-Frequency Concept to Aphasia," in Disorders of Language, ed. by A. V. S. de Reuck and Maeve O'Connor (Boston, Massachusetts: Little, Brown and Company, 1964), p. 62.

Goodglass, Quadfasel, and Timberlake used both free conversation and oral picture descriptions in order to obtain speech samples from fifty-three aphasic subjects.[13]

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[13]H. Goodglass, F. A. Quadfasel, and W. H. Timberlake, "Phrase Length and the Type and Severity of Aphasia," Cortex, I (1964), p. 139.

In summary, a review of selected studies of the frequency of occurrence of words over the last fifty years has been presented in this chapter showing the progression

from written word counts, to spoken word counts of normal subjects, to spoken word counts of aphasic subjects.

CHAPTER III

PROCEDURES

Few studies have investigated the frequency of occurrence of words in the speech of aphasic speakers. However, studies concerning the frequency of occurrence of words in speech samples obtained from aphasic speakers may provide information regarding the clinical management of these patients. Therefore, this study was designed to investigate the frequency of occurrence of words within part-of-speech classes in the speech of aphasic subjects. The explanations of the experimental work are reported under the following headings: hypothesis, selection of subjects, stimulus materials and recording of samples, preparation of transcriptions, classification of words, and categorization of data.

Hypothesis

The null hypothesis of this study is that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures).

Selection of Subjects

The subjects were twelve white males from the Durham Veteran's Administration Hospital who were diagnosed as being aphasic. The diagnoses were made by the speech pathologists at the Durham Veteran's Administration Hospital according to the aphasic classification system used at that hospital. The classification of the subjects is presented in Table 1. All subjects passed a screening test at 25 dB for hearing loss. No visual field impairments were reported in the patients' medical records.

TABLE 1

APHASIC CLASSIFICATION OF SUBJECTS

S_1 . . . moderate expressive/mild-to-moderate receptive
S_2 . . . moderate expressive/moderate receptive
S_3 . . . predominantly moderate expressive
S_4 . . . moderate expressive/moderate receptive
S_5 . . . moderate expressive/severe receptive
S_6 . . . predominantly mild expressive
S_7 . . . moderate expressive/mild-to-moderate receptive
S_8 . . . moderate expressive/severe receptive
S_9 . . . moderate expressive/moderate receptive
S_{10} . . . moderate expressive/mild receptive
S_{11} . . . predominantly mild-to-moderate expressive
S_{12} . . . mild-to-moderate expressive/mild receptive

Stimulus Materials and Recording of Samples

The stimulus materials were four groups of questions about family, military service, work experience, and leisure interests, and five pictures (1, 2, 5, 6BM, 17BM) from the Thematic Apperception Test (TAT).[11]

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[11] H. A. Murray, Thematic Apperception Test (Cambridge, Massachusetts: Harvard University Press, 1943).

The auditory stimuli were presented to the aphasic subjects as follows:

1. I'm going to ask you a question about your family, and I want you to tell me these kinds of things about your family. Are you married? Do you have any children? How old are they? What are their hobbies? Are they in school or do they work? Tell me everything you can about your family.

2. I'm going to ask you a question about your military service, and I want you to tell me these kinds of things about your military service. Which war were you in? Where were you stationed? How long were you in the service? Which branch of the armed forces were you in? What was your rank? Tell me everything you can about your military service.

3. I'm going to ask you a question about your hobbies, and I want you to tell me these kinds of things about your hobbies. What do you do in your spare time? What are your favorite activities? What do you like to do for recreation? Tell me everything you can about your hobbies.

4. I'm going to ask you a question about the kinds of work you've done in your life. What have you done to make a living? Describe any kinds of work you've done and what your work involved. Describe to me exactly what you did in your job. Tell me everything you can about the kinds of work you used to do.

The visual stimuli were presented to the aphasic subjects as follows:

This is a story-telling task. I have some pictures here that I am going to show you, and for each picture I want you to make up a story. Tell me what has happened before and what is happening now. Say what the people are feeling and thinking and how it will come out. You can make up any kind of a story you please. Do you understand? Here is the first picture. Tell me a story about this picture.

For each auditory and visual stimulus, if the patient requested a repetition of the instructions, or if the patient did not respond within thirty seconds, the

directions were repeated. Each session was tape recorded. Recordings not exceeding five minutes duration were obtained for each of the nine tasks.

Preparation of Transcriptions

The method used in preparing the transcriptions followed the one used by Jones and Wepman.[12] A typewritten transcription was compiled from each tape-recorded session. All recognizable English words were transcribed in conventional orthography. Dialectical variations in pronunciations were ignored. Vowels or consonants omitted in pronunciation were replaced in transcription, for example, "Whacha doing?" became "What are you doing?" Vocal gestures, such as, "uh," "ah," or "um," were also transcribed.

Punctuation was added to the transcriptions and was limited to apostrophes, periods, question marks, and ellipses. The apostrophe was used to indicate possessive forms and contractions. A comma was used when a short pause occurred within a sentence-like sequence. A period was used when a pause followed a closed, completed word sequence. A question mark was used when word order, intonation, or context indicated that a question had been

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[12] Lyle V. Jones and Joseph M. Wepman, A Spoken Word Count (Chicago: Language Research Associates, 1966), pp. 4-6.

asked. Ellipses were used to represent long pauses, either within, or between organized word sequences.

Each transcription was edited by two additional speech pathologists other than the original transcriber. The editors read the transcriptions while listening to the recorded speech. When differences in evaluations appeared, that decision in which two out of three agreed was accepted.

Classification of Words

Jones's and Wepman's grammatical classification system was used for separating words into grammatical classes.[13] The grammatical classes are: noun, verb, adjective, adverb, auxiliary verb, conjunction, pronoun, quantifier, preposition, article, relative, indefinite, interjection, and unclassified.

[13] Lyle V. Jones, Morris F. Goodman, and Joseph M. Wepman, "The Classification of Parts of Speech for the Characterization of Aphasia," Language and Speech, VI (1963), pp. 97-102.

All contractions were separated into two component words. Both words were then assigned to their appropriate part-of-speech class. Extraneous repetitions of a word were omitted from the word count. For example, in the utterance "I have a . . . a . . . a daughter," all but the first occurrence of the word "a" was omitted.

Categorization of Data

The words elicited from these patients are grouped into four lists. Lists I and II present the words elicited by questions and TAT pictures alphabetically within part-of-speech classes. (See Appendixes A and B respectively for Lists I and II.) Lists III and IV present the words elicited by questions and TAT pictures alphabetically. (See Appendixes C and D respectively for Lists III and IV.)

CHAPTER IV

RESULTS AND DISCUSSION

This study was designed to collect data on the frequency of occurrence of words within part-of-speech classes in the speech of aphasic subjects. Speech samples were obtained by two methods, verbal stimuli (questions) and visual stimuli (TAT pictures), from twelve white male aphasic subjects. Typewritten transcriptions of the speech samples were prepared, and these transcriptions were edited by two additional speech pathologists other than the original researcher. The words obtained in the speech samples were then classified into thirteen part-of-speech classes: noun, verb, adjective, adverb, auxiliary verb, conjunction, pronoun, quantifier, preposition, article, relative, indefinite, and interjection.

Results

The total number of words from the twelve subjects was 7054. The verbal stimuli elicited 4431 words, with a range from 133 to 826. The visual stimuli elicited 2623 words, with a range from 46 to 475.

The frequency of words used in each of the thirteen part-of-speech classes elicited by the two methods (questions and pictures) was analyzed using the chi-square

statistic ($x^2 = \sum_{i-1}^{13} \frac{(f_i-e_i)^2}{e_i}$) where f_i is the observed frequency for the i^{th} part-of-speech class and e_i is the expected frequency for the i^{th} part-of-speech class. A summarization of the observed and expected data is in Table 2, page 22.

The value of the chi-square statistic obtained in the analysis of the grouped data was 507.2 for 12 degrees of freedom. The critical value for the chi-square statistic with 12 degrees of freedom is 26.2 at the .01 level of significance. Therefore, the null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected.

Using the chi-square statistic, the proportion of words used in each of the thirteen part-of-speech classes elicited by the two methods (questions and pictures) was analyzed for each individual subject. The results of the twelve chi-square analyses may be seen in Table 3, page 23. One notes that the degrees of freedom for subject four (S_4) and subject six (S_6) are less than twelve. This was the result of some of the part-of-speech classes having no words, and the chi-square statistic has degrees of freedom equal to the number of non-empty classes minus one. The

TABLE 2

Observed and Expected Frequencies of Words Used in Speech Samples from Aphasic Subjects by Part-of-Speech Classification and Method of Stimulation

Parts-of-Speech	Verbal Stimuli		Visual Stimuli	
	Observed	Expected	Observed	Expected
Noun	498	454	225	269
Verb	643	624	350	369
Adjective	101	329	423	195
Adverb	333	307	155	181
Pronoun	950	900	483	533
Relative	58	67	48	39
Article	153	163	106	96
Indefinite	40	41	26	25
Auxiliary	476	487	299	288
Quantifier	311	253	91	149
Preposition	466	437	229	258
Conjunction	334	303	149	180
Interjection	68	67	39	40

TABLE 3

Results of Individual Analysis of the Data of the Twelve Subjects

Subjects	Obtained Chi-Square	Degrees of Freedom
S_1	24.8**	12
S_2	15.9	12
S_3	11.7	12
S_4	32.6**	11
S_5	7.8	12
S_6	17.8*	10
S_7	11.8	12
S_8	23.6**	12
S_9	21.8**	12
S_{10}	13.2	12
S_{11}	19.8*	12
S_{12}	19.9*	12

*indicates a significant chi-square value at $\alpha = .10$

**indicates a significant chi-square value at $\alpha = .05$

null hypothesis was rejected for four of the subjects (S_1, S_4, S_8, S_9) at the .05 level of significance. The null hypothesis was not rejected at the .05 level of significance for eight of the subjects.

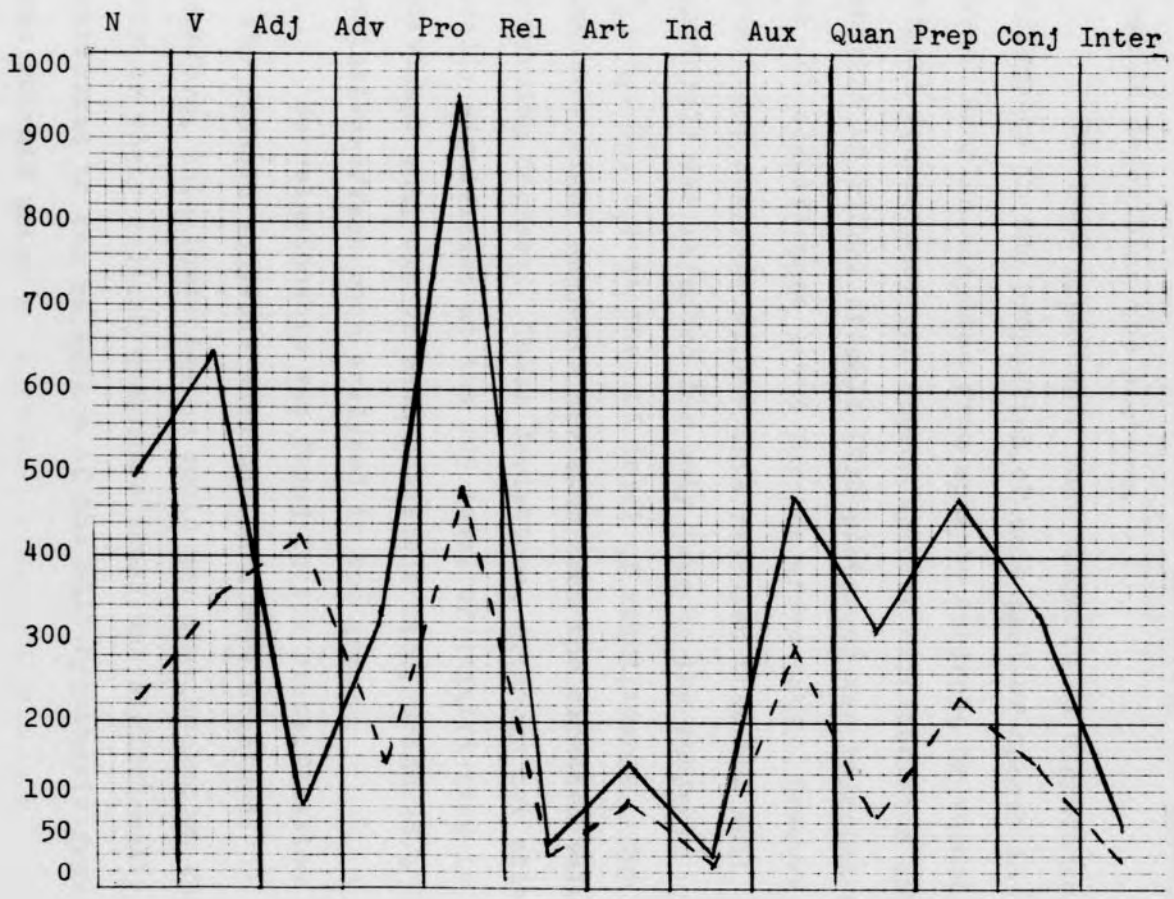
In summary, the null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected at the .01 level of significance. Also, the null hypothesis was rejected for four of the twelve subjects at the .05 level of significance in individual analysis of the data of each of the subjects.

Discussion

The data shown in Figure 1, page 25, reveals that the subjects responded with more words to the verbal stimuli than to the visual stimuli. Within each part-of-speech class, except the adjectives, more words were used in answering questions than in describing the TAT pictures. The frequency of words used in the noun, adverb, and pronoun classes doubled when the stimulus method used to elicit speech was questions rather than TAT pictures.

A reversal of the established pattern occurred in the adjective class; more adjectives were used in describing the TAT pictures than in answering the general questions.

Figure 1. Frequency of Occurrence of Words Within Grammatical Classes



——— indicates words obtained by verbal stimuli.
- - - - indicates words obtained by visual stimuli.

As examination of Table 2, page 22, reveals, if the observed values had been a "good fit" with the expected values, more adjectives would have been used in answering the questions than in describing the pictures.

The null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected at the .01 significance level for the group data. However, individual analysis of the data revealed that the null hypothesis was rejected for only four of the subjects (S_1, S_4, S_8, S_9) at the .05 level of significance. The remaining eight subjects deviated from the expected values in varying degrees. These deviations, although not statistically significant at the .05 level of significance in the individual analysis of each subject's data, produced a cumulative effect when analyzed in the group.

No relationship was found in the classification of the aphasic subjects when the data were examined. Therefore, this investigator could not distinguish on the basis of their medical diagnosis those who significantly contributed to the rejection of the null hypothesis from those who did not.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Speech samples were obtained from twelve white male aphasic speakers by two different stimulus methods, verbal (questions) and visual (TAT pictures). Typewritten transcriptions of the speech samples were prepared, and the words obtained were classified into thirteen grammatical classes: noun, verb, adjective, adverb, auxiliary verb, conjunction, pronoun, quantifier, preposition, article, relative, indefinite, interjection. The proportion of words used in each of the thirteen part-of-speech classes elicited by the two stimulus methods was analyzed using the chi-square statistic.

The results of this study indicate that there is a significant difference in speech samples of aphasic subjects elicited by responding to questions and speech samples elicited by responding to TAT pictures in the proportion of words used in grammatical classes. The null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected at the .01 level of significance for the grouped data. Individual responses were examined

statistically and the null hypothesis that there is no significant difference in the proportion of each part-of-speech in speech samples elicited from aphasic subjects by verbal stimuli (questions) and speech samples elicited from aphasic subjects by visual stimuli (TAT pictures) was rejected for four of the twelve subjects at the .05 level of significance.

The results of this study can be applied in the clinical management of aphasic patients. Verbal stimuli (questions) elicited more words from the aphasic patients in this study than did visual stimuli (TAT pictures). Therefore, in the clinical management of patients, verbal stimuli rather than visual stimuli should be used in order to obtain speech samples containing a greater frequency of words.

Also, this study has shown that the stimulus method used to elicit speech may affect the proportion of words used in each grammatical class. This study found that more adjectives are used in describing pictures than in answering questions; however, in all of the other grammatical classes more words were used in answering questions than in describing pictures. Thus, in the clinical management of aphasic patients, a clinician should be aware that adjectives greatly increase when visual stimuli, instead of verbal stimuli, are used to elicit speech.

Further research should be completed. Conversational speech samples obtained from aphasic speakers should be analyzed.

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APPENDIX A

LIST A

All words used by the twelve speakers in answering four groups of questions are presented alphabetically within grammatical class. Each word is followed by a number (n) representing the number of times the word was used.

NOUNS

	n
Africa	1
airplane	1
Alice Joy Williams	1
April	3
Arkansas	1
arm	1
Asheville	1
Atlanta	1
August	1
babies	2
baby	2
badminton	1
ball	2
Baltimore	4
beach	1
bed	1
bedding	1
birthday	1
bit	2
boss	5
boy	6
boys	6
branch	1
brother	1
building	4
buildings	3
bull	1
business	2
car	1
carpenter	3
Chapel Hill	11
child	1
children	5
claim	1
Coleman	2
college	5
contractor	1
cook	1
Cora Belle Dover	1
corps	1
couple	1
crackers	1
daddy	2
David	4
day	6
days	21
D. C.	1
December	1
Dewey Williams	1
dickens	1
difference	1
doctor	3
doctors	2
Durham	2
East Carolina	1
Egypt	2
end	1
engine	1
factory	1
farmers	1
father	2
February	3
fellow	2
fertilizer	1
fireman	1
fishing	1
folks	1
foreman	1
Fort Raleigh	1
games	5
girl	5
girls	8
God	1
Greensboro	1
gun	1
hands	2
hello	1
Hillsboro	1
home	3
horses	1
hospital	1
houses	5
Hunt	1
IBM	3
James	1
Jane	1
January	4
Jim	1
job	3
Joe	1
July	2
June	3
Kansas	1
Kerry	1
Kevin	1
kids	5

kind	2	Phillis	1
knee	1	poker	1
Korea	1	preacher	1
Korean War	1	private	1
lady	2	Prospect Hill	1
Linda	1	question	1
lining	1	railroad	1
lot	3	road	1
Louise	1	Ronald	1
mamma	3	Rosie	2
man	8	Roxboro	2
March	3	Sally	2
Margaret	3	Saturday	4
May	3	school	9
mechanics	1	September	1
men	1	sergeant	1
Mike	1	service	6
mile	2	set	1
miles	1	ship	1
mind	2	side	1
minute	2	sister	2
Mississippi	1	son	1
Monday	3	son-in-law	1
money	8	spring	1
month	6	staff	1
months	7	states	1
mother	3	street	1
motors	2	stuff	1
mountains	1	Suggs	1
moves	1	Sunday	4
name	7	supply	1
navy	9	tables	1
New York	3	tanker	2
night	1	telephone	1
Norfolk, Virginia	1	tennis	1
Norlina	1	Texas	1
November	1	thing	9
October	1	things	6
outside	1	Thursday	2
Pacific	2	time	10
pain	1	today	1
painter	4	town	1
panels	1	trains	1
part	4	truck	1
peace	1	Virginia	2
people	5	war	1
picture	1	way	9
place	7	Wayne	1
places	1	week	6
plant	1	weeks	1
plenty	1	while	2

wife	6
woman	1
wonder	1
word	1
words	1
work	5
world	1
year	11
years	12
youngsters	1

VERBS

	n
asked	1
believe	8
born	2
bought	3
build	10
building	3
built	11
busted	2
call	8
calling	1
came	1
can	14
caused	1
come	13
coming	3
cook	1
cut	2
decided	2
die	1
died	2
divorced	2
do	2
drafted	1
drinks	1
driving	1
farm	1
farmed	1
feed	1
fell	1
find	2
finish	1
finished	5
finishes	1
fish	3
fishing	3
fix	1
fixed	1
forget	1
found	2
gave	1
get	13
give	4
go	21
goes	1
going	10
got	40
grew	1
guess	4
happened	1
happens	1
hate	3
help	6
helps	1
hid	1
hire	1
hunt	3
hunting	3
keep	3
kept	1
kill	2
killed	1
knew	1
know	59
lack	2
lay	1
learn	3
left	2
let	10
like	12
lived	1
lives	4
loaded	1
look	3
looked	2
looking	2
lost	1
love	2
made	2
make	3
makes	1
married	11
mean	4
means	1
mess	3
messed	2

move	1
moved	2
name	1
nursing	1
operate	1
paid	1
paint	1
painting	1
pay	1
paying	1
picket	1
play	1
plowing	2
preaching	1
put	5
quitting	1
reading	1
rebuild	1
reckon	7
remember	4
rides	1
ruined	1
run	3
said	2
say	22
saying	1
see	15
seen	2
sent	2
set	2
shipped	1
shot	1
shoot	1
sold	3
spend	1
start	1
started	1
stay	3
stayed	7
staying	1
stays	1
steal	1
stick	1
stopped	1
supposed	1
swimming	1
take	3
talk	3
talked	1
talking	1
taught	1
tell	8
telling	2
think	8
thinking	1
threw	1
told	2
took	3
transferred	1
try	4
trying	5
turned	2
understand	1
used	13
using	1
wait	1
want	4
wanted	3
watch	1
went	34
wish	1
won	1
work	20
worked	13
working	6
works	2

ADJECTIVES

	n
able	1
all	3
back	3
better	2
electric	1
else	1
exactly	2
far	1
finally	4
generally	1
gifted	1
good	12
great	1
hard	1
hardly	1
high	2
last	2

late	1
little	2
long	4
loose	1
lost	1
medical	1
new	5
next	6
old	3
older	3
oldest	1
open	1
other	1
regular	1
right	10
sick	2
small	1
smart	1
sober	1
sorry	1
sure	5
sweet	2
wonderful	1
wrong	1
yonder	1
young	3
youngest	1

ADVERBS

	n
again	4
ago	3
almost	3
already	2
anyway	2
better	1
course	4
else	7
ever	5
here	10
just	23
kindof	2
long	2
maybe	3
near	10
never	3
not	96
now	15
ofcourse	1
okay	1
only	2
outside	1
pretty	1
probably	5
real	2
really	1

PRONOUNS

	n
he	32
her	7
him	6
his	3
I	398
it	103
me	24
mine	6
my	32
one	6
she	29
that	84
them	49
these	6
they	50
this	29
those	2
us	10
we	13
you	84
your	1
yourself	1

RELATIVES

	n
how	2
that	12
what	36
when	9
whenever	1
where	6
wherever	1
which	1
who	2
why	1

ARTICLES

	n
a	72
the	81

INDEFINITES

	n
anybody	1
anything	9
everyday	1
everything	14
nobody	1
nothing	4
somebody	1
something	9

AUXILIARY VERBS

	n
am	25
are	7
be	8
been	10
can	36
could	9
did	22
do	47
does	3
doing	2
done	2
had	33
has	8
have	31
is	95
ought	2
was	95
were	3
will	19
would	16

QUANTIFIERS

	n
all	34
another	1
any	3
both	1
each	1
eight	4
eighty	2
enough	1
every	4
fifty	1
fifty-five	2
first	5
five	9
forty	2
forty-five	2
four	21
fourth	1
half	4
hundred	12
last	4
little	7
many	3
more	7
much	7
nine	1
nineteen	2
no	5

INTERJECTIONS

	n
me	1
my	1
no	12
oh	5
okay	4
see	13
shit	1
well	39
yeah	5

PREPOSITIONS

	n
about	33
after	5
around	4
at	27
away	3
back	13
by	1
down	8
except	1
for	33
from	8
in	60
like	14
of	59
off	2
on	15
out	24
over	14
to	118
under	2
up	12
with	10

CONJUNCTIONS

	n
and	214
as	8
because	15
before	1
but	38
cause	9
if	9
or	10
since	5
so	19
than	1
till	3
whether	1
while	1

APPENDIX B

LIST B

All words used by the twelve speakers in describing five Thematic Apperception Test pictures are presented alphabetically within grammatical class. Each word is followed by a number (n) representing the number of times the word was used.

NOUNS

	n
actor	1
arms	1
army	1
baby	1
background	1
bit	2
book	1
books	5
boy	16
boys	2
child	1
children	1
circus	1
daddy	1
daughter	1
door	2
family	1
farm	2
father	10
fiddle	2
field	1
fireplace	1
flower	1
fuses	1
garden	1
girl	11
grain	4
guitar	1
hand	1
head	3
hell	1
hills	1
home	5
honey	1
hour	2
house	2
husband	2
job	1
kid	1
kind	1
lady	9
legs	1
life	1
light	1
lights	1
lot	3
mamma	2
man	10
matter	1
mechanic	1
medicine	1
men	1
money	1
morning	1
mother	8
mud	1
mule	2
mules	1
muscles	1
name	2
news	1
operation	1
part	1
peasant	1
people	2
piano	1
place	8
places	1
plants	1
play	1
rest	1
room	2
rope	7
school	6
schools	1
shoulder	1
sister	2
son	1
street	1
sudden	1
table	1
thing	3
things	6
time	5
times	1
top	1
tree	1
violin	2
way	2
wife	2
window	1
woman	8
women	1
words	1
work	3
world	1

VERBS

	n
act	1
believe	3
bought	2
break	1
broke	2
brought	1
buy	1
call	6
can	13
care	1
climb	1
climbing	7
come	2
could	1
crawled	1
cut	5
die	1
dressed	2
drink	2
drinking	2
farming	1
fix	3
fixing	2
flying	1
get	13
getting	3
give	1
go	8
going	7
gone	2
got	12
guess	1
happened	1
help	3
hope	1
hung	1
hurry	3
killed	1
know	35
knows	1
learn	3
leaving	1
let	2
letting	1
like	1
likes	1
live	1
lives	1
locked	1
look	10
looked	1
looking	7
looks	15
lost	2
love	2
loves	1
make	1
makes	1
making	2
mean	5
means	1
meant	1
mourning	1
move	1
name	1
notice	2
outdone	1
painting	2
picking	1
play	7
played	1
plowing	5
putting	1
reckon	2
run	1
runs	1
saw	1
say	15
says	2
see	18
sitting	2
sleep	1
sneaking	1
standing	3
started	1
stay	1
stuck	1
take	1
taking	1
talk	1
talking	1
tell	5
think	7
thinking	2
try	3
trying	8

turn	2
use	1
used	6
wait	1
walking	1
want	2
wants	5
watching	1
went	1
wish	2
work	3
worked	2
working	2

ADJECTIVES

	n
acrobatic	1
all	1
alright	1
asleep	1
bad	1
beautiful	1
better	1
big	1
bigger	2
clean	1
close	1
dark	1
dead	2
far	1
good	6
great	1
grown	1
little	7
mad	2
mighty	1
old	3
older	1
poor	1
ready	4
real	6
red	1
right	2
sad	1
scared	2
sick	1
sober	1
strange	1
strong	4
sure	1
tired	2
wrong	2
young	5

ADVERBS

	n
again	1
already	2
always	2
awful	2
else	1
even	1
hard	2
here	14
instead	2
just	7
kindof	3
maybe	6
never	2
not	43
now	11
ofcourse	1
only	1
pretty	1
probably	1
real	4
really	1
right	4
sometime	1
somewhere	2
soon	1

PRONOUNS

	n
he	87
her	12
him	5
his	18
I	97
it	54
me	6
my	12
she	31

that	63
their	1
them	8
these	3
they	14
this	23
those	1
us	2
we	4
you	42

RELATIVES

	n
how	4
that	13
what	24
when	3
where	3
why	1

ARTICLES

	n
a	66
an	1
the	39

INDEFINITES

	n
anything	1
everything	2
everywhere	1
nothing	3
somebody	3
something	15
somewhere	1

AUXILIARY VERBS

	n
am	7
are	8
be	18
been	6
can	20
could	10
do	33
does	2
doing	2
had	9
has	9
have	5
having	1
is	119
might	7
ought	1
was	22
will	3
would	14

QUANTIFIERS

	n
all	19
another	1
any	1
each	1
eighteen	2
fifty	1
fifty-four	1
first	1
five	1
forty	2
hundred	1
last	2
little	6
many	1
more	8
mostly	1
much	2
nineteen	2
no	1

one	10
other	3
same	7
seventeen	1
six	1
sixty-five	1
some	6
thirty	1

INTERJECTIONS

	n
boy	1
goodness	1
my	1
no	4
oh	5
sir	2
well	16
yeah	6
yes	2

PREPOSITIONS

	n
about	16
around	3
at	11
away	1
back	8
before	1
beside	1
by	1
down	5
for	11
from	1
in	21
into	1
like	32
near	1
of	12
on	8
out	10
over	2
through	2
to	50
up	12
with	9

CONJUNCTIONS

	n
and	81
as	6
because	5
but	21
cause	6
either	1
if	5
or	10
so	3
whether	1

APPENDIX C

LIST C

All words used by the twelve speakers in answering four groups of questions are presented in alphabetical order. Each word is followed by a grammatical code and by a number (n) representing the number of times the word was used. The grammatical codes are presented below:

Code	Class
N	Noun
V	Verb
A	Adjective
D	Adverb
X	Auxiliary
C	Conjunction
P	Pronoun
Q	Quantifier
O	Preposition
T	Article
R	Relative
I	Indefinite
J	Interjection

	Code	n		Code	n
a	T	72	birthday	N	1
able	A	1	bit	N	2
about	O	33	born	V	2
Africa	N	1	boss	N	5
after	O	5	both	Q	1
again	D	4	bought	V	3
ago	D	3	boy	N	6
airplane	N	1	boys	N	6
Alice Joy Williams	N	1	branch	N	1
all	A	3	brother	N	1
all	Q	34	build	V	10
almost	D	3	building	N	4
already	D	2	building	V	3
am	X	25	buildings	N	3
and	C	214	built	V	11
another	Q	1	bull	N	1
any	Q	3	business	N	2
anybody	I	1	busted	V	2
anything	I	9	but	C	38
anyway	D	2	by	O	1
April	N	3	call	V	8
are	X	7	calling	V	1
Arkansas	N	1	came	V	1
arm	N	1	can	V	14
around	O	4	can	X	36
as	C	8	car	N	1
Asheville	N	1	carpenter	N	3
asked	V	1	cause	C	9
at	O	27	caused	V	1
Atlanta	N	1	Chapel Hill	N	11
August	N	1	child	N	1
away	O	3	children	N	5
babies	N	2	claim	N	1
baby	N	2	Coleman	N	2
back	A	3	college	N	5
back	O	13	come	V	13
badminton	N	1	coming	V	3
ball	N	2	contractor	N	1
Baltimore	N	4	cook	N	1
be	X	8	cook	V	1
beach	N	1	Cora Belle Dover	N	1
because	C	15	corps	N	1
bed	N	1	could	X	9
bedding	N	1	course	D	4
been	X	10	couple	N	1
before	C	1	crackers	N	1
believe	V	8	cut	V	2
better	A	2	daddy	N	2
better	D	1	David	N	4

	Code	n
day	N	6
days	N	21
D. C.	N	1
December	N	1
decided	V	2
Dewey Williams	N	1
dickens	N	1
did	X	22
die	V	1
died	V	2
difference	N	1
divorced	V	2
do	V	2
do	X	47
doctor	N	3
doctors	N	2
does	X	3
doing	X	2
done	X	2
down	O	8
drafted	V	1
drinks	V	1
driving	V	1
Durham	N	2
each	Q	1
East Carolina	N	1
Egypt	N	2
eight	Q	4
eighty	Q	2
electric	A	1
else	A	1
else	D	7
end	N	1
engine	N	1
enough	Q	1
ever	D	5
every	Q	4
everyday	I	1
everything	I	14
exactly	A	2
except	O	1
factory	N	1
far	A	1
farm	V	1
farmed	V	1
farmers	N	1
father	N	2
February	N	3
feed	V	1
fell	V	1
fellow	N	2
fertilizer	N	1
fifty	Q	1
fifty-five	Q	2
finally	A	4
find	V	2
finish	V	1
finished	V	5
finishes	V	1
fireman	N	1
first	Q	5
fish	V	3
fishing	N	1
fishing	V	3
five	Q	9
fix	V	1
fixed	V	1
folks	N	1
for	O	33
foreman	N	1
forget	V	1
Fort Raleigh	N	1
forty	Q	2
forty-five	Q	2
found	V	2
four	Q	21
fourth	Q	1
from	O	8
games	N	1
gave	V	1
generally	A	1
get	V	13
gifted	A	1
girl	N	5
girls	N	8
give	V	4
go	V	21
God	N	1
goes	V	1
going	V	10
good	A	12
got	V	40
great	A	1
Greensboro	N	1
grew	V	1
guess	V	4
gun	N	1
had	X	33

	Code	n		Code	n
half	Q	4	Kevin	N	1
hands	N	2	kids	N	5
happened	V	1	kill	V	2
happens	V	1	killed	V	1
hard	A	1	kind	N	2
hardly	A	1	kindof	D	2
has	X	8	knee	N	1
hate	V	3	knew	V	1
have	X	31	know	V	59
he	P	32	Korea	N	1
hello	N	1	Korean War	N	1
help	V	6	lack	V	2
helps	V	1	lady	N	2
her	P	7	last	A	2
here	D	10	last	Q	4
hid	V	1	late	A	2
high	A	2	lay	V	1
Hillsboro	N	1	learn	V	3
him	P	6	left	V	2
hire	V	1	let	V	10
his	P	3	like	O	14
home	N	3	like	V	12
horses	N	1	Linda	N	1
hospital	N	1	lining	N	1
houses	N	5	little	A	2
how	R	2	little	Q	7
hundred	Q	12	lived	V	1
Hunt	N	1	lives	V	4
hunt	V	3	loaded	V	1
hunting	V	3	long	A	4
I	P	398	long	D	2
IBM	N	3	look	V	3
if	C	9	looked	V	2
in	O	60	looking	V	2
is	X	95	loose	A	1
it	P	103	lost	A	1
James	N	1	lost	D	1
Jane	N	1	lot	N	3
January	N	4	Louise	N	1
Jim	N	1	love	N	2
job	N	3	made	V	2
Joe	N	1	make	V	3
July	N	2	makes	V	1
June	N	3	mamma	N	3
just	D	23	man	N	8
Kansas	N	1	many	Q	3
keep	V	3	March	N	3
kept	V	1	Margaret	N	3
Kerry	N	1	married	V	11

	Code	n
May	N	3
maybe	D	3
me	J	1
me	P	24
mean	V	4
means	V	1
mechanics	N	1
medical	A	1
men	N	1
mess	V	3
messed	V	2
Mike	N	1
mile	N	2
miles	N	1
mind	N	2
mine	P	6
minute	N	2
Mississippi	N	1
Monday	N	3
money	N	8
month	N	6
months	N	7
more	Q	7
mother	N	3
motors	N	2
mountains	N	1
move	V	1
moved	V	2
moves	N	1
much	Q	7
my	J	1
my	P	32
name	N	7
name	V	1
navy	N	9
near	D	10
never	D	3
new	A	5
New York	N	3
next	A	6
night	N	1
nine	Q	1
nineteen	Q	2
no	J	12
no	Q	5
nobody	I	1
Norfolk, Virginia	N	1
Norlina	N	1

	Code	n
not	D	96
nothing	I	4
November	N	1
now	D	15
nursing	V	1
October	N	1
of	O	59
ofcourse	D	1
off	O	2
oh	J	5
okay	D	1
okay	J	4
old	A	3
older	A	3
oldest	A	1
on	O	15
one	P	6
only	D	2
open	A	1
operate	V	1
or	C	10
other	A	1
ought	X	2
out	O	24
outside	D	1
outside	N	1
over	O	14
Pacific	N	2
paid	V	1
pain	N	1
paint	V	1
painter	N	4
painting	V	1
panels	N	1
part	N	4
pay	V	1
paying	V	1
peace	N	1
people	N	5
Phillis	N	1
picket	V	1
picture	N	1
place	N	7
places	N	1
plant	N	1
play	V	1
plenty	N	1
plowing	V	2

	Code	n
poker	N	1
preacher	N	1
preaching	V	1
pretty	D	1
private	N	1
probably	D	5
Prospect Hill	N	1
put	V	5
question	N	1
quitting	V	1
railroad	N	1
reading	V	1
real	D	2
really	D	1
rebuild	V	1
reckon	V	7
regular	A	1
remember	V	4
rides	V	1
right	A	10
road	N	1
Ronald	N	1
Rosie	N	2
Roxboro	N	2
ruined	V	1
run	V	3
said	V	2
Sally	N	2
Saturday	N	4
say	V	22
saying	V	1
school	N	9
see	J	13
see	V	15
seen	V	2
sent	V	2
September	N	1
sergeant	N	1
service	N	6
set	N	1
set	V	2
she	P	29
ship	N	1
shipped	V	1
shit	J	1
shot	V	1
shoot	V	1
sick	A	2
side	N	1
since	C	5
sister	N	2
small	A	1
smart	A	1
so	C	19
sober	A	1
sold	V	3
somebody	I	1
something	I	9
son	N	1
son-in-law	N	1
sorry	A	1
spend	V	1
spring	N	1
staff	N	1
start	V	1
started	V	1
states	N	1
stay	V	3
stayed	V	7
staying	V	1
stays	V	1
steal	V	1
stick	V	1
stopped	V	1
street	N	1
stuff	N	1
Suggs	N	1
Sunday	N	1
supply	N	1
supposed	V	1
sure	A	5
sweet	A	2
swimming	V	1
tables	N	1
take	V	3
talk	V	3
talked	V	1
talking	V	1
tanker	N	2
taught	V	1
telephone	N	1
tell	V	8
telling	V	2
tennis	N	1

	Code	n
Texas	N	1
than	C	1
that	P	84
that	R	12
the	T	81
them	P	49
these	P	6
they	P	50
thing	N	9
things	N	6
think	V	8
thinking	V	1
this	P	29
those	P	2
threw	V	1
Thursday	N	2
till	C	3
time	N	10
to	O	118
today	N	1
told	V	2
took	V	3
town	N	1
trains	N	1
transferred	V	1
truck	N	1
try	V	4
trying	V	5
turned	V	2
under	O	2
understand	V	1
up	O	12
us	P	10
used	V	13
using	V	1
Virginia	N	2
wait	V	1
want	V	4
wanted	V	3
war	N	1
was	X	95
watch	V	1
way	N	9
Wayne	N	1
we	P	13
week	N	6
weeks	N	1
well	J	39
went	V	34
were	X	3
what	R	36
when	R	9
whenever	R	1
where	R	6
wherever	R	1
whether	C	1
which	R	1
while	C	1
while	N	2
who	R	2
why	R	1
wife	N	6
will	X	19
wish	V	1
with	O	10
woman	N	1
won	V	1
wonder	N	1
wonderful	A	1
word	N	1
words	N	1
work	N	5
work	V	20
worked	V	13
working	V	6
works	V	2
world	N	1
would	X	16
wrong	A	1
year	N	11
years	N	12
yonder	A	1
you	P	84
young	A	3
youngest	A	1
your	P	1
yourself	P	1
youngsters	N	1

APPENDIX D

LIST D

All words used by the twelve speakers in describing five Thematic Apperception Test pictures are presented in alphabetical order. Each word is followed by a grammatical code and by a number (n) representing the number of times the word was used. The grammatical codes are presented below:

Code	Class
N	Noun
V	Verb
A	Adjective
D	Adverb
X	Auxiliary
C	Conjunction
P	Pronoun
Q	Quantifier
O	Preposition
T	Article
R	Relative
I	Indefinite
J	Interjection

	Code	n
a	T	66
about	O	16
act	V	1
actor	N	1
acrobatic	A	1
again	D	1
all	A	1
all	Q	19
already	D	2
alright	A	1
always	D	2
am	X	7
an	T	1
and	C	81
another	Q	1
any	Q	1
anything	I	1
are	X	8
arms	N	1
army	N	1
around	O	3
as	C	6
asleep	A	1
at	O	11
away	O	1
awful	D	2
baby	N	1
back	O	8
background	N	1
bad	O	1
be	X	18
beautiful	A	1
because	C	5
been	X	6
before	O	1
believe	V	3
beside	O	1
better	A	1
big	A	1
bigger	A	2
bit	N	2
book	N	1
books	N	5
bought	C	2
boy	J	1
boy	N	16
boys	N	2
break	V	1
broke	V	2
brought	V	1
but	C	21
buy	V	1
by	O	1
call	V	6
can	V	13
can	X	20
care	V	1
cause	C	6
child	N	1
children	N	1
circus	N	1
clean	A	1
climb	V	1
climbing	V	7
close	A	1
come	V	2
could	V	1
could	X	10
crawled	V	1
cut	V	5
daddy	N	1
dark	A	1
daughter	N	1
dead	A	2
die	V	1
do	X	33
does	X	2
doing	X	2
door	N	2
down	O	5
dressed	V	2
drink	V	2
drinking	V	2
each	Q	1
eighteen	Q	2
either	C	1
else	D	1
even	D	1
everything	I	2
everywhere	I	1
family	N	1
far	A	1
farm	N	2
farming	V	1
father	N	10
fiddle	N	2

	Code	n
field	N	1
fifty	Q	1
fifty-four	Q	1
fireplace	N	1
first	Q	1
five	Q	1
fix	V	3
fixing	V	2
flower	N	1
flying	V	1
for	O	11
forty	Q	2
from	O	1
fuses	N	1
garden	N	1
get	V	13
getting	V	3
girl	N	11
give	V	1
go	V	8
going	V	7
gone	V	2
good	A	6
goodness	J	1
got	V	12
grain	N	4
great	A	1
grown	A	1
guess	V	1
guitar	N	1
had	X	9
hand	N	1
happened	V	1
hard	D	2
has	X	9
have	X	5
having	X	1
head	N	3
he	P	87
hell	N	1
help	V	3
her	P	12
here	D	14
hills	N	1
him	P	5
his	P	18
home	N	5
honey	N	1
hope	V	1
hour	N	2
house	N	2
how	R	4
hundred	Q	1
hung	V	1
hurry	V	3
husband	N	2
I	P	97
if	C	5
in	O	21
into	O	1
instead	D	2
is	X	119
it	P	54
job	N	1
just	D	7
killed	V	1
kid	N	1
kind	N	1
kindof	D	3
know	V	35
knows	V	1
lady	N	9
last	Q	2
learn	V	3
leaving	V	1
legs	N	1
let	V	2
letting	V	1
life	N	1
light	N	1
lights	N	1
like	O	32
like	V	1
likes	V	1
little	A	7
little	A	6
live	V	1
lives	V	1
locked	V	1
look	V	10
looked	V	1
looking	V	7
looks	V	15
lost	V	2
lot	N	3
love	V	2

	Code	n
loves	V	1
mad	A	2
make	V	1
makes	V	1
making	V	2
mamma	N	2
man	N	10
many	Q	1
matter	N	1
maybe	D	6
me	P	6
mean	V	5
means	V	1
meant	V	1
mechanic	N	1
medicine	N	1
men	N	1
might	X	7
mighty	A	1
money	N	1
more	Q	8
morning	N	1
mostly	Q	1
mother	N	8
mourning	V	1
move	V	1
much	Q	2
mud	N	1
must	X	3
mule	N	2
mules	N	1
muscles	N	1
my	J	1
my	P	12
name	N	2
name	V	1
near	O	1
never	D	2
news	N	1
nineteen	Q	2
no	J	4
no	Q	1
not	D	43
nothing	I	3
notice	V	2
now	D	11
of	O	12
ofcourse	D	1
oh	J	5
old	A	3
older	A	1
on	O	8
only	D	1
one	Q	10
operation	N	1
or	C	10
other	Q	3
ought	X	1
out	O	10
outdone	V	1
over	O	2
painting	V	2
part	N	1
peasant	N	1
people	N	2
piano	N	1
picking	V	1
place	N	8
places	N	1
plants	N	1
play	N	1
play	V	7
played	V	1
plowing	V	5
poor	A	1
pretty	D	1
probably	D	1
putting	V	1
ready	A	4
real	A	6
real	D	4
really	D	1
reckon	V	2
red	A	1
rest	N	1
right	A	2
right	D	4
room	N	2
rope	N	7
run	V	1
runs	V	1
sad	A	1
same	Q	7
saw	V	1

	Code	n		Code	n
say	V	15	they	P	14
says	V	2	thing	N	3
scared	A	2	things	N	6
school	N	6	think	V	7
schools	N	1	thinks	V	2
see	V	18	thirty	Q	1
seventeen	Q	1	this	P	23
shoulder	N	1	those	P	1
she	P	31	through	O	2
sick	A	1	time	N	5
sir	J	2	times	N	1
sister	N	2	tired	A	2
sitting	V	2	to	O	50
six	Q	1	top	N	1
sixty-five	Q	1	tree	N	1
sleep	V	1	try	V	3
sneaking	V	1	trying	V	8
so	C	3	turn	V	2
sober	A	1	up	O	12
some	Q	6	us	P	2
somebody	I	3	use	V	1
something	I	15	used	V	6
sometime	D	1	violin	N	2
somewhere	D	2	wait	V	1
somewhere	I	1	walking	V	1
son	N	1	want	V	2
soon	D	1	wants	V	5
standing	V	3	was	X	22
started	V	1	watching	V	1
stay	V	1	way	N	2
strange	A	1	we	P	4
street	N	1	well	J	16
strong	A	4	went	V	1
stuck	V	1	what	R	24
sudden	V	1	when	R	3
sure	A	1	where	R	3
table	N	1	whether	C	1
take	V	1	why	R	1
taking	V	1	wife	N	2
talk	V	1	will	X	3
talking	V	1	window	N	1
tell	V	1	wish	V	2
that	P	63	with	O	9
that	R	13	woman	N	8
the	T	39	women	N	1
their	P	1	words	N	1
them	P	8	work	N	3
these	P	3	work	V	3

	Code	n
worked	V	2
working	V	2
world	N	1
would	X	14
wrong	A	2
yeah	J	6
yes	J	2
you	P	42
young	A	5